

ROCKY FLATS PLANT, EMERGENCY MEDICAL
SERVICES FACILITY
(Building 122)
SW corner of Central & Third Aves.
Golden vicinity
Jefferson County
Colorado

HAER No. CO-83-S

HAER
COLO
30-GOLD.V
19-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service
1849 C St. NW
Washington, DC 20240

HISTORIC AMERICAN ENGINEERING RECORD

ROCKY FLATS PLANT,
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Location: Rocky Flats Environmental Technology Site, Highway 93, Golden, Jefferson County, Colorado. Building 122 is located on the southwest corner of Central and Third avenues. Building 122 is connected to Building 121.

Date of Construction: 1953.

Fabricator: Austin Co., Cleveland, Ohio.

Present Owner: United States Department of Energy (USDOE).

Present Use: Emergency Medical Services.

Significance: This building is a primary contributor of the Rocky Flats Plant historic district, and is associated with the U.S. strategy of nuclear military deterrence during the Cold War, a strategy considered of major importance in preventing Soviet nuclear attack. Building 122 housed the on-site medical facilities of the Plant and the occupational health and internal dosimetry organizations. Emergency medical services, diagnosis, decontamination, first aid, x-ray, and minor surgical treatment were carried out in this building. In addition to providing medical care, personnel in this building conducted medical research and studies. Body counting was conducted in this building to measure radioactive material in the body.

Historians: D. Jayne Aaron, Environmental Designer, engineering-environmental Management, Inc. (e²M), 1997. Judith Berryman, Ph.D., Archaeologist, e²M, 1997.

Project Information:

In 1995, an inventory and evaluation was conducted of facilities at the Rocky Flats Plant (Plant) for their potential eligibility for listing in the National Register of Historic Places. The primary goal of this investigation was to determine the significance of the Cold War era facilities at the Plant in order to assess potential effects of the long-term goals and objectives of the USDOE. These goals and objectives have not been finalized, but include waste cleanup and demolition. Recommendations regarding National Register of Historic Places eligibility were developed to

allow USDOE to submit a formal determination of significance to the Colorado State Historic Preservation Officer for review and concurrence and to provide for management of historic properties at the Plant.

From this determination and negotiations with the Colorado State Historic Preservation Officer, the Advisory Council, and the National Park Service, a Historic American Engineering Record project began in 1997 to document the Plant's resources prior to their demolition. The Plant was listed on the National Register of Historic Places in 1997. The archives for the Historic American Engineering Record project are located in the Library of Congress in Washington, D.C.

Introduction:

The Plant is one of thirteen USDOE facilities that constitute the Nuclear Weapons Complex, which designed, manufactured, tested, and maintained weapons for the U.S. arsenal. The Plant was established in 1951 to manufacture triggers for use in nuclear weapons and to recycle plutonium recovered from retired weapons. Each trigger consisted of a first-stage fission bomb that set off a second-stage fusion reaction in a hydrogen bomb. Parts were formed from plutonium, uranium, beryllium, stainless steel, and other materials.

A tense political atmosphere both at home and abroad during the Cold War years drove U.S. weapons research and development. By the 1970s, both the U.S. and the Soviet Union maintained thousands of nuclear weapons aimed at each other. These weapons were staged on submarines, aircraft, and intercontinental ballistic missiles. Both the North Atlantic Treaty Organization and Warsaw Pact countries in Europe had small nuclear warheads called theater weapons used as part of the Mutually Assured Destruction program. (The Mutually Assured Destruction program acted as a deterrent in that if one side attacked with nuclear weapons, the other would retaliate and both sides would perish.) The final nuclear weapons program at the Plant was the W-88 nuclear warhead for the Trident II missile. This mission ended in 1992 when President Bush canceled production of the Trident II missile.

The Plant was a top-secret weapons production plant, and employees worked with a recently man-made substance, plutonium, about which little was known concerning its chemistry, interactions with other materials, and shelf life. The Historic American Engineering Record documentation effort focused on four aspects of the Plant and its role in the Nuclear Weapons Complex; manufacturing operations, research and development, health and safety of workers, and security.

Chronology of Building 122:

1953 Construction completed

1971 Addition

ROCKY FLATS PLANT, EMERGENCY MEDICAL SERVICES FACILITY
HAER No. CO-83-S
(Page 3)

1973 Addition

1994 Office space addition

Building History:

Building 122 houses the on-site medical facilities of the Plant and the occupational health and internal dosimetry organizations. Emergency medical services, diagnosis, decontamination, first aid, x-ray, minor surgical treatment, and ambulatory activities (including coordination with St. Anthony Hospital's Flight for Life) are carried out in this building. The building also contains appropriate clinical and examination facilities to support routine employee and subcontractor physical examinations. Body counting is conducted in this building to measure radioactive material in the body. The facility contains three general areas: administration, internal dosimetry, and medical/health.

Building 122 is built on a concrete slab and is one-story high. The exterior walls are concrete and concrete block. The interior walls are primarily concrete block or gypsum board.

The body counting rooms are of special construction, designed to minimize external sources of radiation. The walls, floors, and ceilings of the body counting rooms are constructed of pre-World War II steel, and provided with graded shielding to eliminate external sources of radiation. Pre-war steel was used, since it is lower in radioactivity than steel created after World War II (not affected by nuclear fallout). Two of the body counting rooms are constructed of steel from battleship hulls, one of the rooms is constructed of steel from the wheels and axles of old freight cars. The graded shielding of lead, tin, and zinc eliminates radioactivity in the room from cosmic sources. When cosmic radiation hits the steel, an x-ray is emitted. This x-ray hits the lead lining of the room, and is stopped. However, the lead lining then emits an x-ray of lower energy, which is stopped by the tin lining. Similarly, the tin lining emits an x-ray of even lower energy, which is stopped by the zinc lining. By this time, the energy is too low to create another emission. This shielding is necessary because of the extreme sensitivity of the body counting equipment.

Building 122 has two decontamination rooms with separate entrances. These rooms provide medical facility access to personnel that have potentially been exposed to radioactive contamination. Medical personnel attending these patients follow specific protective procedures ranging from cleaning with decontaminating solutions to donning respirators and protective suits.

To the west, Building 121 joins Building 122 and there is an L-shaped exterior area between the buildings at the north end. Emergency Exit 3 opens onto this area. The wall separating Building 122 from Building 121 is concrete. The roof is cast-in-place concrete over metal decking.

ROCKY FLATS PLANT, EMERGENCY MEDICAL SERVICES FACILITY
HAER No. CO-83-S
(Page 4)

The exterior dimensions are approximately 100' along the north and south walls and 130' along the east and west walls. The approximate floor space is 12,000 square feet.

Building 122 will remain open and functioning while the Plant is being decommissioned until the risk of exposure and accidents is significantly reduced.

Building Operations:

Building 122 was used to provide medical services to Plant personnel. One of the services was to remove metals from the blood stream of exposed employees, using a procedure called chelation therapy. This procedure used a variety of techniques, however, early success rates in removing metals such as plutonium and uranium were limited.

To improve the success of chelation therapy, the Plant, in collaboration with Colorado State University, performed a study on dogs to develop better methods of removing metals from the blood stream. This study was successful, yielding new therapies for exposed workers.

The subject of another study was the interaction of a solvent with plutonium. This solvent was proposed for use in Plant processes. The study determined that the solvent combined with plutonium allowed toxic exposure through a dermal pathway. As a result of the study, the solvent was not approved for use, preventing what could have become a significant health risk for employees.

Cytogenetic studies performed at the plant resulted in a method to calculate plutonium exposure by measuring cell damage, and to identify beryllium exposure by the identification of beryllium antibodies.

Two medical studies were begun to monitor the long-term effects of exposure to beryllium and radioactive materials such as plutonium, enriched uranium, americium, and others. These studies, mandated by Federal Law (the National Defense Act of 1993), involve all former Plant workers, and are currently being used to detect early signs of disease. The programs include a complete physical every three years.

In addition to research studies and providing medical care to Plant workers, personnel in Building 122 were involved in research and development of radiation detection equipment. The first patent awarded at the Plant was for a radiation wound counter to detect and quantify the presence of radioactive materials inside a wound.

Another significant item developed by medical building personnel was the body counter. This equipment was extremely sensitive, and detected minute amounts of radiation emanating from a person as a result of inhalation of radioactive particles.

ROCKY FLATS PLANT, EMERGENCY MEDICAL SERVICES FACILITY
HAER No. CO-83-S
(Page 5)

- Sources: Bistline, Robert, employed at the Plant since 1966 by the site contractor. Personal communication, November 12, 1997, and January 1998.
- Falk, Roger, employed at the Plant since 1966 by the site contractor. Personnel communication, January 1998.
- United States Department of Energy. *Rocky Flats Plant, Interim Safety Analysis Report (1989)*, by Rockwell International Energy Systems Group. Rocky Flats Repository. Golden, Colorado, 1989.